

What is claimed is:

1. A bi-directional locking device and locking seal including a locking arrangement for receiving and locking a flexible shackle thereto, the shackle having at least one locking element having a tapered portion and a transverse locking shoulder

5 such that the shackle is insertable into a chamber for engagement with the locking arrangement, the locking arrangement comprising:

a body defining said chamber therein having a longitudinal axis extending therethrough and defining a longitudinal direction, the body having opposing top and bottom ends where the top end defines a top opening communicating with the

10 chamber in the longitudinal direction, and the bottom end defines a bottom opening communicating with the chamber in the longitudinal direction; and

a plurality of resilient fingers positioned in the chamber and extending from the body ends toward each other in the longitudinal direction, the plurality of fingers being positioned to allow passage of the at least one locking element of the shackle 15 in first and second opposite insertion directions through either the top or the bottom opening, at least one of the fingers for locking engaging the at least one locking element shoulder in response to the shackle movement in an opposite direction to the insertion direction to lock the shackle to the insert in the opposite direction.

2. The locking device of claim 1 wherein the fingers terminate at a respective

20 corresponding tip portion which abut with and lock with the at least one locking

element in response to the shackle movement in the opposite direction.

3. The locking device of claim 1 wherein at least one first finger extends from the top end and locks with the shackle at least one locking element shoulder when the shackle insertion direction is through the top opening and the shackle is being

5 moved in the opposite direction to the shackle insertion direction, and at least one second finger extends from the bottom end and locks with the shackle at least one locking element shoulder when the shackle insertion direction is through the bottom opening and the shackle is being moved in the opposite direction to the shackle insertion direction.

10 4. The locking device of claim 1 wherein the fingers each being resiliently radially deflected in response to passage of the at least one locking element of the shackle in the chamber, and either the at least one top finger or the at least one bottom finger locks with the at least one locking element of the shackle when the shackle is pulled in a direction opposite the insertion direction.

15 5. The locking device of claim 1 wherein the plurality of fingers include a pair of transversely opposing spaced top fingers relative to the longitudinal axis and opposing pair of transversely spaced bottom fingers, the top and bottom pairs respectively extending toward one another.

6. The locking device of claim 1 wherein the plurality of fingers include at least one top and at least one bottom finger, the at least one top and bottom fingers

are in a mirror image relationship.

7. The locking device of claim 6 wherein the at least one top and bottom fingers each have a channel that extends at an angle inclined toward the longitudinal axis.

5 8. The locking device of claim 6 wherein the top and bottom fingers include a first portion having a first channel extending in the longitudinal direction connected to the bottom and top ends and a second distal portion having a second channel extending from the first portion first channel at an angle.

9. The locking device of claim 8 wherein the angle is acute.

10 10. The locking device of claim 8 wherein the second distal portion extends toward the longitudinal axis.

11. The locking device of claim 8 wherein the top and bottom fingers extend in a direction transverse to the longitudinal axis.

12. The locking device of claim 8 wherein the second distal portion of the fingers extend in a direction transverse to the longitudinal axis.

13. The locking device of claim 2 wherein the finger tip portions terminate at a chamfered edge.

14. The locking device of claim 1 wherein the fingers are integrally molded one piece with the top and bottom ends.

20 15. The locking device of claim 1 wherein the device includes a socket with

said chamber, the locking arrangement comprises an insert for insertion into the chamber.

16. The locking device of claim 5 wherein the plurality of fingers define a passageway adapted to receive the at least one locking element which is annular.

5 17. The locking device of claim 5 wherein the plurality of fingers define a passageway adapted to receive the at least one locking element which includes a frusto-conical portion.

18. The locking device of claim 1 including first and second pairs of spaced mirror image fingers, each pair in mirror image orientation to the other pair, the pairs 10 each defining a portion of a common passageway in the longitudinal direction, wherein the passageway is adapted to receive the at least one locking element which is frusto-conical and includes a rim with a shoulder which abuts the fingers of one of the first and second pairs of spaced mirror image fingers when the shackle is moved in the opposite direction to the insertion direction.

15 19. The locking device of claim 1 further including a socket having a chamber, wherein the locking arrangement comprises an insert fixedly attached inside the socket chamber.

20. The locking device of claim 19 wherein the shackle has a longitudinal axis, the socket is integral and one piece with the shackle and with a flag and 20 wherein the socket has a longitudinal axis that extends substantially perpendicular to

the shackle longitudinal axis.

21. The locking device of claim 19 wherein the body is substantially cylindrical.

22. The locking device of claim 19 wherein the body has a plurality of spaced 5 side walls defining the chamber.

23. The locking device of claim 3 wherein a passageway is defined by the at least one first and second fingers and an inner side wall in transverse spaced relation relative to the longitudinal axis, and the locking element lockingly abuts the inner side wall when the fingers lock with the locking element shoulder.

10 24. The locking device of claim 23 wherein the inner side wall includes a recess adapted and positioned for lockingly engaging the locking element when at least one of the fingers lock with the locking element shoulder.

25. A bi-directional lockable sealing device which comprises:
a socket defining a first chamber therein,
15 a shackle having an at least one locking element, the shackle being fixed at one end to the socket and having a free end opposite the one end;
a locking insert secured to the socket in the first chamber, the locking insert including a body defining a second chamber therein having a longitudinal axis extending therethrough defining a longitudinal direction, the locking insert including 20 opposing top and bottom ends where the top end defines a top opening

communicating with the second chamber, and the bottom end defines a bottom opening communicating with the second chamber; and

a plurality of resilient fingers positioned in the second chamber at least one first finger of the plurality extending from the top end and at least one second finger

- 5 from the plurality extending from the bottom end toward the first finger, the fingers defining a passageway in the second chamber arranged to allow passage of the at least one locking element as the free end of the shackle is pulled through the passageway in an insertion direction via either the top or the bottom opening such that the fingers are in sliding resilient engagement with the at least one locking element, and wherein one of at least one first and second fingers is arranged to abut and lock to at least one of the locking elements of the shackle when the shackle movement is in an opposite direction to the insertion direction providing locking resistance to the shackle.

26. The sealing device of claim 25 wherein at least one finger extending from

- 15 the top end locks with the at least one shackle locking element when the shackle insertion direction is through the top opening and the shackle is being moved in the opposite direction to the shackle insertion direction, and the at least one finger extending from the bottom end locks with the shackle at least one locking element when the shackle insertion direction is through the bottom opening and the shackle is being moved in the opposite direction to the shackle insertion direction.

27. The sealing device of claim 25 further comprising a flag structure attached to the socket.

28. The sealing device of claim 25 further including a shank positioned between the socket and the shackle.

5 29. A bi-directional lockable sealing device which comprises:

a socket including a body defining a chamber therein having a longitudinal axis extending therethrough defining a longitudinal direction, the socket including opposing top and bottom ends where the top end defines a top opening communicating with the chamber, and the bottom end defines a bottom opening
10 communicating with the chamber;

a shackle having at least one locking element, the shackle being fixed at one end to the socket and having a free end opposite the one end; and

15 a plurality of resilient fingers positioned in the chamber of the socket, at least one first finger of the plurality extending from the top end and at least one second finger from the plurality extending from the bottom end toward the first finger, the fingers defining a passageway in the chamber being arranged to allow passage of the at least one locking element as the free end of the shackle is pulled through the passageway in an insertion direction via either the top or the bottom opening such that the fingers are in sliding resilient engagement with the at least one locking element,
20 and wherein one of at least one first and second fingers is arranged to abut and lock to

at least one of the locking elements of the shackle when the shackle movement is in an opposite direction to the insertion direction providing locking resistance to the shackle.

30. A locking insert for use with a sealing device, the insert comprising
5 a body defining said chamber therein having a longitudinal axis extending therethrough and defining a longitudinal direction, the body having opposing top and bottom ends where the top end defines a top opening communicating with the chamber in the longitudinal direction, and the bottom end defines a bottom opening communicating with the chamber in the longitudinal direction; and
10 a plurality of resilient fingers positioned in the chamber and extending from the body ends toward each other in the longitudinal direction, the plurality of fingers being positioned to allow passage of the at least one locking element of the shackle in first and second opposite insertion directions through either the top or the bottom opening, at least one of the fingers for locking engaging the at least one locking element shoulder in response to the shackle movement in an opposite direction to
15 the insertion direction to lock the shackle to the insert in the opposite direction.